Educational heterogamy and father-to-son occupational mobility in 23 industrial nations

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Educational heterogamy and father-to-son occupational mobility in 23 industrial nations: General societal openness or compensatory strategies of reproduction?

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ABSTRACT This article presents 41 educational heterogamy tables for 23 industrial nations after World War II. Countries differ in gross heterogamy rates and relative chances of heterogamy. Evidence is found in favour of a trend towards higher gross rates of heterogamy and towards more equal relative chances of heterogamy. Hypotheses on effects of economic and political factors are tested. The contribution these factors make to the explanation of relative heterogamy is smaller than found in studies on intergenerational mobility. Between countries more equal relative father-to-son occupational mobility chances go together with more equal relative chances of educational heterogamy. Within countries relative mobility chances are more equal than relative chances of heterogamy. All in all Lipset and Zetterberg's notion of general societal openness is confirmed, whereas Bourdieu's notion that mobility and heterogamy are compensatory strategies of reproduction is not upheld.

INTRODUCTION

Comparative mobility research took off in the 1950s when national monographs accumulated. After thorough reanalysis of old tables in the 1960s and 1970s, the 1980s yielded several studies establishing differences between industrial nations with respect to father-to-son occupational mobility by analyzing more recently collected tables (Heath, 1981; Grusky and Hauser, 1984; Erikson and Goldthorpe, 1987; Ganzeboom, Luijkx and Treiman, 1989). In addition to mobility, earlier studies compared outmarriage (Hall, 1954; Lipset and Zetterberg, 1959). By analyzing 41 educational heterogamy tables for 23 industrial nations, this article combines the subject of differences in outmarriage between industrial countries with that of changes in outmarriage within these countries. The first section of this article notes that mobility and outmarriage have routinely been taken to indicate societal openness, reviews the drift of mobility questions, and proposes outmarriage questions on a par with recent ones about mobility. After presenting a framework holding that outmarriage and mobility tell about societal openness, the second section of this article details these outmarriage questions. The third section contrasts two sets of hypotheses answering them. One set was generalized from longstanding hypotheses in the field of comparative social mobility. A rival set applies Bourdieu's (1974, 1989) recent and as yet less well researched notion of compensatory interdependencies between different strategies of reproduction. Contradictory hypotheses pertain to, among other matters, the relation between educational heterogamy and father-to-son occupational mobility. This article's later sections test these two sets of hypotheses.

THE RISE OF MOBILITY ISSUES AND THE FALL OF HETEROGAMY QUESTIONS

Rogoff (1953: 19) stated in her monograph on intergenerational mobility in Marion County, Indianapolis (United States), that 'occupational

mobility is studied as an index of the relative "openness" of a social structure.' Other 1950s studies assumed that father-to-son mobility is but one of several indicators for openness of societies. In a work on social mobility in Britain, Berent (1954: 321) stated: 'One of the tests for the "openness" of social structure is the extent of marriage between persons of different social origins.' A cross-classification of occupations of spouses' fathers was made and one of husbands' and wives' education. This study also contained a comparison of occupational outmarriage tables concluding that the degree of status association between brides and grooms was probably about the same in the United States and England & Wales (Hall, 1954: 346). In the beginning, one might say, questions about openness were twofold.

The first comparison of several national father-to-son mobility tables gained definitive form in a 1959 chapter by Lipset and Zetterberg. On the basis of tables for nine nations it was held that 'the overall pattern of social mobility appears to be much the same in the industrial societies of the various Western countries' (Lipset and Zetterberg, 1959: 13). This result was buttressed by findings on outmarriage. Lipset and Zetterberg had guessed before locating data 'that comparative materials on interclass marriage patterns would reveal that there are fewer marriages across class lines in Europe than in America' (Lipset and Zetterberg, 1959: 47). However, as they pointed out, this exception did not square with Hall's conclusion that marriage patterns in the United States and Britain were similar. In addition, assembled data on outmarriage in Bavaria (Germany), Philadelphia, Aarhus (Denmark), Aberdeen (Scotland), France, Sweden, and Denmark showed similar patterns too. In the end Lipset and Zetterberg regarded the similarity between Europe and America with respect to interclass marriage in some ways as even more interesting than the similarity of their intergenerational mobility.

Blau and Duncan (1967: 354), the paradigm for a second wave of father-to-son mobility studies, answered several questions about outmarriage in the United States. The trend in educational heterogamy, like that in father-to-son mobility, was ascertained by classifying dyads after husband's, in casu son's, cohort (year of birth). The association between spouses' own education was shown to be higher than that between their fathers' occupations. No assertion was made to the effect that heterogamy indicates societal openness.

The claim that frequencies in mobility and outmarriage tables indicate aspects of societal openness surfaced again in mobility studies from the past decade. In 1982 Hout compared a father-to-son mobility table for the United States with a table cross-classifying husbands' and wives' occupation in two-earner US families. He maintained: 'The basic questions underlying the study of intergenerational mobility concern the rigidity of the status hierarchy and the importance of status-group boundaries in the overall process of occupational achievement. The same questions can be addressed through the analysis of the association between husbands' and wives' occupations.' Hout added that 'the unlikely event of there being no association between spouses' occupational statuses would indicate an openness of the status hierarchy not evidenced by studies of the association between fathers' and sons' statuses' (Hout, 1982: 398). In 1984 Sixma and Ultee, as a check upon conclusions for the Netherlands about the trend in father-to-son mobility, compared educational heterogamy tables for this country from 1959, 1971, and 1977. To test the hypothesis that the Scandinavian nations do not differ in outmarriage, Pöntinen (1980, 1983) compared several types of outmarriage tables for these four countries.

Outmarriage tables in the 1980s have been analyzed by log-linear models. At the end of the 1970s these models were applied in studies answering the longstanding question of whether industrial societies display a trend towards more mobility with tables obtained from two surveys undertaken about a decade apart but using almost the same methodology (Featherman and Hauser, 1978). Comparison of tables of this type is an improvement upon comparison of tables obtained by classifying respondents from one survey after their year of birth. Although early studies applying global log-linear models found

no change whatsoever, at the end of the 1980s, after employing more powerful log-linear models, it had become clear that in several industrial nations at least in certain periods a trend towards more mobility occurred (Hope, 1981a for Britain; Erikson, 1983 for Sweden; Ganzeboom and De Graaf, 1983 and Ganzeboom *et al*, 1987 for the Netherlands; Hout, 1988 for the United States). Log-linear models also were applied to father-to-son mobility tables for 16 nations (Grusky and Hauser, 1984). One issue in that comparison was a new version of the old question of whether mobility patterns of industrial societies are similar, another one the question of whether political changes, after allowing for economic factors, make a country's mobility pattern more open.

This review of literature on mobility cum outmarriage indicates that the study of father-to-son mobility progressed from testing the descriptive hypothesis that mobility does not differ between countries by way of small-scale comparisons, towards testing rival explanations of differences between countries through large-scale ones. In contrast, comparative outmarriage studies stuck to the hypothesis of no differences, which was being tested for a dwindling number of cases. Although the stock of published and on-file outmarriage tables by now should be sufficient for a large-scale undertaking, as yet no such study has been attempted. The next section of this article details outmarriage questions for this endeavour. It does so after elaborating a framework comprising mobility and outmarriage as aspects of societal openness.

MOBILITY, OUTMARRIAGE AND SOCIETAL OPENNESS

Although mobility studies routinely suppose that frequencies in father-to-son and outmarriage tables indicate openness, this assumption was not always backed up by cogent arguments.[1] According to this article, the framework for viewing father-to-son mobility and outmarriage as aspects of the openness of a society's social structure is as follows. One general question driving the study of father-to-son mobility is that of societal cohesion. Lipset and Zetterberg, for instance, were not only interested in mobility as a phenomenon in its own right, but also as a preliminary to the larger question of why there is no socialism in the United States and the even more vast one of whether more mobility makes for less political strife. Societal cohesion is not only indicated by the absence of negative relations between a society's strata, but also by the existence of positive links between them, especially primary relations. One such tie is marriage between persons coming from different strata, another one having a son in a different stratum. The more frequent the positive links of a certain type between a society's strata, the more open these strata and the more cohesive this society may be called. According to this argument educational and occupational heterogamy are indicative of a society's openness since these phenomena amount to the existence of positive social relations between persons varying in some important resource in the competition with other members of society for scarce rewards.

Of course, more links between strata are possible than father-to-son and husband–wife relations, and they may differ in strength. In line with Bogardus' (1925a, 1925b) scale for subjective distance between nationalities, Wilkinson's (1929) adaptation of this scale for subjective distance between occupations, and Laumann and Guttman's (1966) analysis yielding objective distances between occupations, the frequency of neighbours and friends with certain occupations also indicate openness of strata. Of these relationships, marriage perhaps tells most about positive social relationships, and paternity least. After all, persons in industrial societies are more discerning about spouses than about friends and neighbours.[2] And although fathers and sons having a dissimilar education or occupation do differ with respect to a certain resource, it is not always possible to assume the existence of positive social relationships: communication by sons may be diminished upon climbing and communication by fathers when their sons descend.

Although father-to-son mobility and heterogamy may be taken as indicative of societal openness in the relational framework outlined above, this interpretation is more prob-

lematic depending on whether individual or households are to be the basic units of mobility research.[3] Father-to-son mobility not only involves the establishment of a relation between social strata, but also the movement of men from one stratum to another. But if flows are taken to indicate openness, which unit changes place in case of outmarriage? Women are moving if the assumption is made that the family is the fundamental unit of stratification and that the occupation of the husband characterizes the wife (Parkin, 1971: 14). On this account, however, movement of women is from father's to husband's occupation, thus discarding Hout's question about the association between husband's and wife's occupation as a question about societal openness. This is not a fully satisfactory position. If individuals are taken as the fundamental unit in stratification research (Acker, 1973), no person is moving when outmarriage takes place, since individuals upon marrying remain individuals. This assumption may make possible analysis of the mobility of daughters, but it does so by doing away with the pertinence of any outmarriage data for questions on openness. This is not satisfactory either. Objections to both positions point towards abandoning the substantialist framework by which they have been generated in favour of a relational one.

Within this relational framework this article addresses questions on educational heterogamy. The reason why no tables cross-classifying occupations of fathers and fathers-in-law were analyzed, is not simply that they were not available in sufficient quantity. If Blau and Duncan's finding is kept in mind that the association between spouses' education is stronger than that between the occupations of their fathers, a case might be made in favour of characteristics of the spouses themselves. The argument for questions on educational heterogamy rather than occupational outmarriage is that the former do and the latter do not refer to all couples, and that questions about all couples are to be preferred. In addition, if occupations form the backbone of an industrial society's reward system (Parkin, 1971: 19), education is its spinal cord.

The starting point for this article's questions on educational heterogamy is that although mobility and outmarriage are aspects of the openness of a society's social structure, these phenomena may or may not point towards vastly different aspects of that structure. If hypotheses accounting for father-to-son mobility in various countries do not also clarify their educational heterogamy, no comprehensive explanation of societal openness is possible. In contrast, if a ranking of countries in terms of father-to-son mobility corresponds with their grading in terms of educational heterogamy, something like the general openness of societies exists. Thus this article's first question is descriptive: are patterns of educational heterogamy, as patterns of mobility supposedly are, pretty much the same in industrial societies? The second one is about changes: since the hypothesis of a trend towards more mobility in industrial nations just will not lie down, is there evidence in favour of a trend towards more educational heterogamy? The third one is explanatory: do economic and political characteristics of industrial nations, purportedly influencing their mobility, also influence their pattern of educational heterogamy? The fourth one is about the relation between mobility and heterogamy: if an industrial nation displays more educational heterogamy, does it also show more father-to-son mobility?

By asking these questions, this article regards Heath (1981) and Grusky and Hauser (1984) as baseline studies. It adds to them, not by analyzing new mobility tables, but by explaining a phenomenon that, like mobility, has been held to indicate a society's openness. This article does not therefore test predictions from current theories about marriage such as those of Blau (1977) and Becker (1981), theories which might also explain mobility. The question of whether the factors accounting for heterogamy in the literature on the family may also influence mobility is considered a separate one.

ALTERNATIVE HYPOTHESES ANSWERING HETEROGAMY QUESTIONS

One set of hypotheses to be tested in this article gives affirmative answers to each of this article's four questions. According to its first hypothesis at one point in time educational heterogamy is

pretty much the same in industrial nations. According to its second one, the ongoing process of industrialization, apart from a trend towards more intergenerational mobility, occasions a trend towards more educational heterogamy. Its third one explains these findings: factors making for mobility in industrial societies also make for heterogamy. These factors are not only economic but also political and include a higher level of economic development, social democracy, state socialism. According to the fourth hypothesis of this set, a ranking of countries after mobility parallels their ranking after heterogamy. According to these hypotheses, something like the general openness of societies exists, and educational heterogamy is part of it.

This set of hypotheses has been expressed most fully by Lipset and Zetterberg (1959), and was employed more recently by Heath. After describing Britain's mobility in 1972 and charting the trend in mobility since the beginning of this century, to sketch long-term trends, Heath (1981: 103) switched to outmarriage data. In a review of equalities in Eastern Europe, Connor (1979: 269) considered the claim that marriage patterns are uniquely 'democratic' under state socialism, and thus distinct from those in the West. Sorokin ([1927], 1964: 185) already contains the hypothesis that if few outmarriages occur in a society, father-to-son inheritance is usual.

The hypothesis that ongoing industrialization makes for more educational heterogamy not only may be obtained by generalizing from mobility research. It has also been presented in the literature on changes in the institution of marriage. According to Kerckhoff (1972), development from an agrarian to an industrial technology was accompanied by a shift from marriages arranged in the interests of families towards love marriages. Shorter (1975: 154, 156) held that one may speak of the advance of true love to the extent that homogamy decreases and people begin marrying those *un*like themselves, and explicitly stated that the tendency to marry within one's general social bracket diminished over the long haul.

Educational sociologists buttressed the hypothesis that social democracy makes for more heterogamy. They did so by holding that laws on comprehensive schooling favoured by social democrats not only weaken the relation between father's occupation and child's education (thus making for more mobility), but also provide opportunities for social interaction across class barriers (Ford, 1968; 1969). If comprehensive schooling is introduced, selection and teaching of pupils according to ability is postponed until a later age. This creates more ties between persons finally attaining different levels of education, whereas they are forestalled by selection before the awaking of sexual awareness. If friendships between teenagers lead to marriages in later life, social democracy makes for heterogamy. This argument implies the hypothesis that the earlier the age stipulated by the educational laws of a country for selecting pupils into different schools, the less educational heterogamy there will be in this country.

Another set of answers to this article's four questions contradicts the 'classical argument' outlined above on all counts. It will be termed the 'rival argument'. According to it, no positive relation between mobility and heterogamy obtains. Indeed, there is a difference in kind between the occupation of a person's father and the education of a person's spouse. The first characteristic is 'ascriptive', while the second one is 'achieved'. Now a prediction that societies become more open, may be derived from the hypothesis that ongoing industrialization makes for a declining influence of ascriptive factors. This hypothesis does not predict a lower association between achieved characteristics. If a person's occupation depends less and less upon the occupation of this person's father and ever more strongly upon the school examinations this persons has passed, males and females with similar qualifications increasingly team up to form a couple. If persons think they will make it because of their education, they will tend to marry others with comparable levels of education.

Examples of this argument in the sociology of the family are Goode (1982: 53) and Collins (1985: 120–121): homogomy because of group pressures in pre-industrial societies gives way to homogamy resulting from free marriage market processes in industrial ones. Punch is added to

this argument by applying Bourdieu's notion of compensatory interdependencies between strategies of reproduction. Bordieu placed educational strategies and matrimonial strategies, among others, under the heading of strategies of reproduction, and argued that if one strategy of reproduction becomes less successful, investments in other strategies increase (Bourdieu, 1972: 1123; 1974: 35; 1979: 177–178; 1989: 386–392). A well-known exemplification of this notion is the hypothesis that rich parents to some extent offset the diminishing influence of their financial resources on the education of their children by heavier investments in cultural resources. De Graaf (1986) is a corroboration of this prediction for the Netherlands. This article suggests another instance of Bourdieu's notion of compensatory interdependencies: if the intergenerational transfer of resources decreases, members of the new generation with above average resources increasingly pool their resources. What happens to the parties in parent–child dyads upon a slackening of reproduction through one strategy, is that parents to some extent compensate their children and that children to a certain degree help themselves. Thus, if the transmission of higher occupations by fathers to their sons diminishes, educational homogamy thrives.

The hypotheses making up the rival argument thus answer this article's first question with the not-so-definite hypothesis that countries may very well differ in educational heterogamy. According to the rival argument the answer to this article's second question is that a trend towards more father-to-son occupational mobility is accompanied by a trend towards less educational heterogamy. Also according to the rival argument, if economic development increases, heterogamy decreases. And if pupils are selected at a later age, this not only will lead to more mobility, but also to less educational heterogamy. This answers this article's third question. The rival answer to this article's fourth question is that the more father-to-son mobility in an industrial society, the less educational heterogamy it displays.

The issue of whether outmarriage and father-to-son mobility indicate vastly different or equivalent aspects of societal openness has now been turned into testable alternative hypotheses. These hypotheses will be tested in the following sections of this article.

DATA

Tables on educational heterogamy were obtained for 23 industrial nations. For some countries more than one table is analyzed. For France, Hungary, the Netherlands and the United States three tables have been found. There are two tables for Austria, Australia, Canada, England & Wales, the Federal Republic of Germany, Finland, Flemish Belgium, Japan, Norway, and Sweden. One table has been procured for Czechoslovakia, Denmark, the Irish Republic, Italy, Northern Ireland, New Zealand, Poland, Scotland, and Yugoslavia. This makes for 41 tables in all. Missing industrial nations are the German Democratic Republic, the Soviet Union, Spain, and Switzerland.

The aim for this article was to collect at least one table dated 1970 or later, and at least one for some year before 1970 but after World War II. As mentioned, for nine countries only one table—always referring to 1970 or later—was found. For Austria, Canada, Federal Republic of Germany, Finland, Flemish Belgium, and Sweden both are dated after 1970, for Japan both tables are from before that year. As far as coverage of age groups goes, there are two less satisfactory tables. They are for Flemish Belgium and pertain to married women in the 20–44 years age range.

Numbers of cases for tables differ widely. Eight tables are taken from a census and refer to whole populations. Seven of them pertain to more than a million couples. They contrast with four tables referring to somewhat less than 1,000 marriages. The table for Finland in 1972 has the lowest number of cases, 617 to be exact. Nine tables are taken from public use samples of population counts, labour force surveys, etc. They have at least some 10,000 cases.

Differences in numbers of cases create a difficulty that may be elucidated by an example from comparative mobility research. Grusky and Hauser (1984) in one log-linear analysis compared 16 father-to-son mobility tables that

sometimes pertained to somewhat less than one thousand cases and mostly to a few thousand cases. The largest one referred to some 50,000 cases, the next largest to about 12,000 cases, and the next to some 10,000. A consequence of using these original numbers is that one compares the tables having few cases with the few based on the highest numbers. It is almost impossible for a country with a large number of cases to show a large residual with respect to estimated models. This just does not square with the design of a comparative analysis: every country should be compared with every other country. Grusky and Hauser (1984: 33) try to solve this difficulty by examining scatter plots.

The difficulty of varying numbers is especially pressing with tables for more than a million and less than 1,000 couples. Under these circumstances inspecting plots is out of order. To bypass the problem of widely different numbers, in the present case all tables were adjusted to a base of 1,000 marriages (Erikson and Goldthorpe, 1987: 62 is a precedent). The argument for 1,000 as a base, apart from the neatness of this number, was twofold. First, it is not much above the original numbers of cases for the smallest tables. Secondly, given the global character of the hypotheses to be tested, a choice for, say, 10,000 as a base, would divert attention to the specifics of heterogamy patterns, details that have been bypassed by comparative mobility research too. It is acknowledged that more complicated techniques might be developed fully using the original number of cases. However, a standard methodology is lacking, and its development is beyond the scope of this article.

As expected, the original classifications for level of education of these 41 tables differed from one another. For comparative purposes they were reduced to the closest approximation of a fourfold scheme. Values of this standard variable *Educational Level* were: (*a*) at most a primary education or compulsory schooling, (*b*) at most a lower-level type of secondary education, (*c*) at most a higher level of secondary education, and (*d*) tertiary education, i.e. university, but also professional qualifications obtained after higher-level secondary education. One intention behind this standard is equal distance within and between countries in number of years of schooling between the subsequent levels. Levels of this standard are (about) identical to those of a classification for OECD member countries (OECD, 1972). If the relation between education and occupation were fixed and straightforward, the lowest level of education might stand for lower manual jobs, the second lowest for upper manual, the next for lower non-manual, and the highest for upper non-manual jobs.

Again predictably, when recoding to standard levels, choices between unsatisfactory options had to be made. Five tables originally had a four-by-four form. These were taken as given. All other tables were recoded as well as possible into tables with standard educational levels. This was done by using a classification of educational systems in OECD member countries (OECD, 1972). Of these recodings, the one for Japan is perhaps least satisfactory. In most tables the distance between levels in number of years seems more or less equal, but for Japan the distance between the highest and the second highest level is decidedly greater than that between other adjacent levels. In Table 1 the educational heterogamy tables and the number of cases (marriages) are presented. The Appendix provides additional information on the original surveys.

To analyze these tables, the next sections of this article apply log-linear models. This technique is appropriate since this article's educational heterogamy tables pertain to categorical data. The specific log-linear models fitted resemble those applied to mobility tables. This is the case, since the task of eliminating the consequences of differences in educational structures for males and females in the case of educational heterogamy is similar to that of controlling for the effects of changes in occupational structures in research on social mobility. For an exposition of log-linear models for mobility tables, see Hout (1983).

The fit of log-linear models until now primarily has been determined by L^2. Doubts have been raised about the application of this convention. The larger the number of cases, the stronger is the punishment these conventions mete out for analyzing them (cf. Erikson and

TABLE 1 *Cross-classification of married couples according to educational level of husband and wife in 23 post-war industrial nations*

Country	Relative Frequencies[a]																N of cases
Australia 66	13	14	22	19	4	33	27	25	4	13	131	76	6	19	74	520	2,333,000
Australia 81	42	40	16	7	20	183	81	39	8	64	142	44	6	45	65	198	30,276
Austria 71	6	12	9	12	2	15	17	33	0	3	12	36	1	11	52	779	1,705,205
Austria 81	13	15	13	12	4	17	22	32	1	4	22	48	4	16	83	694	1,729,065
Belgium, Flanders 76	43	42	23	7	21	84	82	59	7	49	132	117	3	23	85	223	3,984
Belgium, Flanders 83	142	76	32	6	42	129	82	29	16	69	152	55	2	20	46	102	2,432
Canada 71	18	14	42	3	3	10	38	6	5	19	365	90	1	6	137	243	4,605,495
Canada 81	40	21	52	2	8	13	52	4	14	32	462	76	1	4	91	128	1,122,304
Czechoslovakia 80	25	46	5	9	10	115	38	71	3	83	116	149	1	22	21	286	30,299
Denmark 72	19	19	15	3	7	53	40	18	1	34	143	123	1	8	55	461	733
England & Wales 49	6	9	7	8	4	64	17	117	3	12	18	23	2	61	20	629	5,533
England & Wales 72	9	30	13	12	2	52	25	65	0	26	49	111	1	45	66	494	8,513
Fed. Rep. Germany 71	19	43	16	11	4	54	52	48	2	42	188	295	0	6	27	193	126,573
Fed. Rep. Germany 82	54	72	30	11	11	82	93	48	4	51	214	213	0	4	23	90	6,670
Finland 72	44	15	11	2	3	32	34	11	8	23	113	89	0	19	112	484	617
Finland 81	54	25	26	10	22	31	45	26	15	37	120	86	8	22	124	349	5,522
France 59	30	26	18	4	3	31	26	25	2	28	112	94	1	9	74	517	1,646
France 69	55	25	16	3	7	55	35	20	9	45	135	91	2	25	64	413	7,304
France 81	39	20	26	6	12	22	45	8	20	36	360	125	3	6	104	168	60,000
Hungary 60	7	15	17	3	2	16	35	10	1	8	86	73	0	3	81	643	2,388,007
Hungary 70	15	26	17	2	5	38	49	11	2	29	193	88	0	4	88	433	2,324,608
Hungary 80	28	38	15	2	12	71	62	10	5	63	292	80	0	3	65	254	2,686,441
Irish Republic 73	10	10	16	13	1	6	11	21	3	8	15	38	2	24	47	775	1,437
Italy 79	34	45	8	5	19	96	66	31	4	34	112	89	0	9	33	415	2,325
Japan 55	11	73	21	4	6	75	64	17	1	55	313	127	0	13	47	173	1,586
Japan 65	16	87	10	0	10	138	95	10	4	80	376	77	0	5	46	46	1,704
Norway 57	2	7	19	7	1	7	11	13	0	6	99	113	1	5	120	589	1,113
Norway 72	44	51	43	11	7	55	49	31	8	44	181	169	3	8	65	231	747
Northern Ireland 73	13	8	3	26	1	7	5	42	0	5	6	34	1	31	12	806	1,759
Netherlands 59	4	12	19	11	1	15	34	33	0	9	79	168	0	4	40	571	10,000
Netherlands 71	23	26	32	18	6	21	44	31	6	29	139	164	2	12	68	379	300,000
Netherlands 83	55	67	35	6	28	120	135	67	7	61	124	84	2	23	57	129	2,808
New Zealand 81	158	33	124	14	21	14	31	5	72	32	285	40	14	5	67	85	643,521
Poland 82	33	27	5	10	16	97	51	55	9	86	70	87	11	50	82	311	1,880
Sweden 72	65	38	30	14	9	56	61	30	11	34	127	82	4	19	58	362	735
Sweden 81	68	50	20	7	30	109	54	34	8	52	77	78	5	32	82	294	4,148
Scotland 73	16	30	10	13	2	49	21	60	1	21	24	56	2	59	50	586	3,844
United States 62	113	93	16	8	36	178	51	22	15	76	73	36	12	55	70	146	9,763
United States 73	169	123	13	4	46	242	57	19	10	66	60	23	6	42	44	76	19,527
United States 83	270	135	16	7	64	221	48	10	12	63	50	18	5	29	20	32	1,368
Yugoslavia 71	7	14	17	3	2	16	35	10	1	8	86	73	0	3	81	644	2,622

Note: (a) Relative cell frequencies of educational heterogamy tables are given in per thousands:
first column: highest education males—highest education females,
second column: highest education males—second highest education females,
. . .
15th column: lowest education males—second lowest education females,
16th column: lowest education males—lowest education females.

Goldthorpe, 1987: 60). The (reweighted) number of cases analyzed here is relatively large, 41,000 to be exact. Given the lack of fit according to conventional standards of most log-linear models applied until now, *BIC*-measures have been proposed as a guideline for choosing between models (Raftery, 1986). They were calculated by Ultee and Luijkx (1986), Hauser and Wong (1989) and Hout (1989). Until now no alternative to *BIC*, nor a criticism of it, has appeared in the literature. This article will present L^2- and *BIC*-measures.

IS HETEROGAMY MUCH THE SAME IN INDUSTRIAL SOCIETIES?

Since Lipset and Zetterberg, one issue in comparative mobility research is whether or not mobility patterns are much the same in industrial societies. Similarity of patterns was first interpreted as similarity of gross mobility rates and later as that of relative mobility chances. These chances were expressed as odds ratios. Since Lipset and Zetterberg used data on outmarriage to buttress their thesis, it is interesting to see whether gross rates and relative chances of outmarriage are similar in industrial societies.

For each of the 41 educational heterogamy tables featured in this article the percentage of heterogamous marriages was calculated. The minimum was 17 (Northern Ireland 1973) and the maximum 57 (the Netherlands 1983). The average heterogamy rate was 38 (standard deviation 10 per cent). It is obvious that an outmarriage table version of Lipset and Zetterberg's thesis does not hold for rates of educational heterogamy in Western industrial societies after World War II. This picture of dissimilarity is furnished too by percentages for strongly heterogamous marriages. If percentages partners differing at least one level of education are calculated, the minimum is three (Japan 1965) and the maximum 20 (England & Wales 1949). The average is nine (standard deviation 4 per cent).

If the notion of similarity of outmarriage patterns is interpreted as similarity of relative chances, log-linear modelling is appropriate. In this article the cross-classification of educational level of husband (i) by educational level of wife (j) by table (k) is considered. Let M designate educational level of husband, F the educational level of wife and T the (group) variable Table. The expected frequencies for each cell (i,j,k) of the 4-by-4-by-41 cross-classification are given by the following log-linear equation:

$$\ln F_{ijk} = a_{1ik} + a_{1jk} + a_{2jk} + b_{ijk}$$

$$\text{where: } \sum_{j=1}^{J} a_{2jk} = 0,\ a_{1ik} = a_{1jk} \text{ for } i = j \qquad (1)$$

$$b_{ijk} = b_{jik} \text{ for } i \neq j,\ b_{ijk} = 0 \text{ for } i = j$$
$$(i = 1\ldots4;\ j = 1\ldots4;\ k = 1\ldots41)$$

The a_{1ik} and a_{1jk} are *size* effects, i.e. the effects that express the total size of each of the educational level categories for each of the countries; the a_{2jk} are the *structural difference* effects, i.e. the effects that show the differences in educational distributions for husbands and wives (for each educational level j and each table k); and the b_{ijk} effects are the (symmetric) association effects. The Goodman notation is used to express hierarchical log-linear models.[4] The models considered here are all conditional threeway tables. Because we assume the association in the k tables to be symmetric, we will label the constrained twoway marginal $[MF]$ as $[Sym]$.[5]

The model of *Conditional Homogeneous Quasi-Symmetry* tests whether or not the same pattern of symmetric association holds for all 41 tables ($[MT][FT][Sym]$, Model 6 in Table 2). The test statistic (L^2) for this model is 1,216·4 with 363 degrees of freedom. The conclusion is that the tables differ in the relative chances of heterogamy.[6]

The model of *Conditional Heterogeneous Quasi-Symmetry* assumes different patterns of symmetric association for the 41 tables ($[MT][FT][SymT]$, Model 9 in Table 2). The result ($L^2 = 77{\cdot}2$ and 123 df) indicates that this article's data satisfy Sobel, Hout and Duncan's (1985) condition of symmetric association. This gives impetus to fitting other, more parsimonious, symmetric models later on in this article. It also shows that the (symmetric) association in the 41 tables differs significantly ($L^2 = 1{,}139{\cdot}2$ with 240 df).

The findings of this section contradict the

TABLE 2 *Goodness-of-fit statistics for log-linear models for cross-classification of married couples according to educational level of husband and wife in 23 post-war industrial nations*

	Models[a]	L^2	df	bic
1	Grand Mean	69,267	655	62,310
2	[T][H][Sym]	20,845	606	14,408
3	[T][H][SymT]	15,039	366	11,152
4	[T][M][F][Sym]	19,555	603	13,150
5	[T][M][F][SymT]	13,748	363	9,892
6	[MT][FT][Sym]	1,216·4	363	–2,639
7	[HT][SymT]	2,835·4	246	223
8	[HT][D][SymT]	1,544·0	243	–1,037
9	[MT][FT][SymT]	77·2	123	–1,229
	[6]–[9]	1,139·2	240	
	[7]–[9]	2,758·2	123	
	[7]–[8]	1,291·4	3	
	[8]–[9]	1,466·8	120	
10	[MT][FT][Step]	1,499·3	368	–2,409
11	[MT][FT][StepT]	939·4	328	–2,544
12	[MT][FT][Step] [StepSD][StepSS] [StepA][StepT1] [StepT2]	1,425·3	363	–2,430
	[10]–[11]	559·9	40	
	[10]–[12]	74·5	5	
	[12]–[11]	485·9	35	
13	[MT][FT][Step][Dia]	1,434·4	367	–2,464
14	[MT][FT][StepT] [DiaT]	594·9	287	–2,453
15	[MT][FT][Step] [StepSD][StepSS] [StepA][StepT1] [StepT2]	1,271·6	357	–2,520
	[13]–[14]	839·5	80	
	[13]–[15]	162·8	10	
	[15]–[14]	676·7	70	
16	[HT][Shift][SymT]	1,854·7	245	–748
17	[HT][ShiftT][SymT]	1,077·8	205	–1,100
18	[HT][Shift][ShiftSS] [ShiftSD][ShiftA] [ShiftT1][ShiftT2] [SymT]	1,662·6	240	–887
	[16]–[17]	776·9	40	
	[16]–[18]	192·1	5	
	[18]–[17]	584·8	35	

Note: (a) F = Wife's Educational Level; M = Husband's Educational Level; T = Table; Sym = Symmetric Association; Step = Fixed Distances; Dia = Main Diagonal effect; H = Halfway; D = Structural Difference; Shift = Systematic Shift in the Marginals; A = School Selection at Age of 12; SD = Years of Social Democratic Government; SS = Years of State Socialist Government; #Telephones per thousand one year (T1) and 21 years (T2) before survey.

classical argument and possibly support the rival one. Since this article's final section will determine whether differences in educational heterogamy between countries compensate those in father-to-son mobility, a full answer to this article's first question will be given in that section.

IS THERE A TREND TOWARDS MORE HETEROGAMY IN INDUSTRIAL SOCIETIES?

To answer trend questions, this section uses a special feature of the data: for 14 countries more than one outmarriage table is available. For these countries pairs of tables were formed, and for countries with three tables two pairs (consisting of its first and second, and of its first and third table), resulting in a total of 18 pairs. This allows for a neat answer to the double question of whether gross rates of education heterogamy have increased and relative chances of educational heterogamy have become more equal.

When analyzing differences in gross heterogamy rates between later and earlier tables of a pair, five pairs display negative and 13 positive differences. The average difference is positive (7 per cent). This confirms the hypothesis that there is a trend towards higher rates of gross heterogamy. This hypothesis is corroborated by differences in percentages between strongly heterogamous marriages. In that case, six differences are negative and 12 positive. The average difference is positive, this time only 1 per cent. Countries going against this trend are Flemish Belgium, Japan, and the United States.

To answer the question about relative chances the *Fixed Distance Model* (Haberman, 1979: 500–503) was applied.[7] In case of heterogamy tables, this model represents the hypothesis that the larger the educational differences between males and females, the fewer the number of marriages. We will express this term by [*Step*]. The interpretation of the parameter is straightforward: the less negative a *Step* parameter, the more open is a marriage pattern.[8]

The model of *Conditional Heterogeneous Fixed Distance* ([*MT*][*FT*][*StepT*])[9] was applied to every pair of the 18 pairs of heterogamy tables

TABLE 3 *Goodness-of-fit statistics and parameter estimates for the log-linear model [M][F][Step] in 18 post-war industrial nations compared at two points in time*

Country[a]	L^{2}[b]	Parameter Early Table[c]	Change in Second Table[d]	Conditional Test[e]
Australia 66–81	38·9	0·39	1·09	1·37
Austria 71–81	11·1*	0·39	1·12	1·40
Belgium, Flanders 76–82	40·5	0·48	0·86	6·22*
Canada 71–81	26·9*	0·37	1·03	0·10
England & Wales 49–72	73·0	0·58	0·90	2·56
FRG 71–82	72·4	0·37	1·01	0·01
Finland 72–81	43·4	0·35	1·34	18·37*
France 59–69	34·2	0·33	1·04	0·28
France 59–81	25·4*	0·33	1·29	10·94*
Hungary 60–70	42·6	0·28	1·02	0·06
Hungary 60–80	52·8	0·28	1·02	0·05
Japan 55–65	86·3	0·33	1·04	0·21
Netherlands 59–71	32·3	0·34	1·31	8·72*
Netherlands 59–83	62·2	0·34	1·48	20·59*
Norway 57–72	35·8	0·43	0·98	0·08
Sweden 72–81	36·6	0·38	1·12	2·98
USA 62–73	22·5*	0·44	0·90	2·69
USA 62–83	20·2*	0·44	0·91	2·23

Notes: (a) Years next to a country indicate year of early and recent table.
(b) Degrees of freedom in all cases: 16 (critical value: 33).
(c) Multiplicative Step-parameter for the first table.
(d) Step-parameter in second table relative to Step-parameter in the first table.
(e) Conditional test with one degree of freedom of [MT][FT][StepT] *vs.* [MT][FT][Step] on equality of parameter *Step* in both tables.
* $p<0·01$.

just analyzed. It embodies the hypothesis that, given marginal differences, within a country some trend in relative chances of heterogamy exists. As judged by L^{2} (see Column 1 of Table 3) the fit of the model is acceptable in five cases, and about the same number of tables comes close to it. From the parameters in Columns 2 and 3, it appears that there is a slight trend towards more openness. Of 18 changes 13 are in this direction. To determine significances, the model just discussed was compared with the model of *Conditional Homogeneous Fixed Distance* ([*MT*][*FT*][*Step*]). Five of the conditional test statistics (Column 4 of Table 3) for the test of equality of the association ([*MT*][*FT*][*StepT*] *vs.* [*MT*][*FT*][*Step*]) in the two tables of each country are significant; of these, four are in the direction of more openness. For Flemish Belgium 1976–1982 there is a significant trend towards closure; for Finland 1972–1981, France 1959–1981, the Netherlands 1959–1971, and the Netherlands 1959–1983, there is a significant trend towards openness.

To sum up: on the whole rates of heterogamy have increased. Relative chances of heterogamy have become somewhat more equal, but no more than that. Although these findings do not provide strong support for the argument that heterogamy has increased, they more sharply contradict the hypothesis postulating a trend towards less heterogamy. The conclusion of no trend seems too easy.

DIFFERENCES IN HETEROGAMY BETWEEN COUNTRIES EXPLAINED

Empirical indicators

When devising empirical indicators of economic and political factors for a comparative analysis

of outmarriage tables, a difficulty becomes apparent in comparative research pertaining to total populations of nations. Why determine associations between heterogamy measured in a certain year and country characteristics for that same year? Did not most people marry long before, is not the education of most persons fixed in early life? From a similar perspective Hewitt in 1977 criticized then current studies of industrial societies in which a country's degree of income inequality is taken as a variable to be explained, and economic and political factors as exogenous variables. In the studies criticized by Hewitt, the latter factors were ascertained for the same date as income inequality. Hewitt (1977: 459), in contrast, measured social-democratic government as the average legislative strength of socialist parties between 1945 and 1965. Hewitt's *historical* way of measuring exogenous variables is followed here.

One exogenous variable (*SD*) used in the analysis is the number of years of social-democracy in the 40 years preceding a particular survey, another one (SS) is the number of years of state socialism during that period. A period of 40 years was chosen because of the possible incremental effects of government policies and the duration of older marriages. The main sources for figures were De Swaan (1973) and *Keesing's Contemporary Archives* (several years). A year of coalition government of a social-democratic party with a party to its right was counted as half a year. Another measure (*A*) ascertains whether 20 years before the date of an outmarriage table, a country's school system selected pupils (tracking according to ability) before or after the age of 12. The lag of 20 years is somewhat arbitrary, but given Hewitt's criticism a measure for a nation's present educational laws is clearly wide of the mark. Information about this characteristic was taken from sections on a country's educational system in encyclopedias.

If economic factors are to be measured in a historical way, familiar measures like gross national product per capita at purchasing power parities or per capita energy consumption are not always available. In addition, these measures are less reliable for state socialist countries. Instead, data for economic develop-

TABLE 4 *Exogenous variables measured for 23 post-war industrial nations*

Country and Year	T1[a]	T2[b]	SD[c]	SS[d]	A[e]
Australia 66	248	110	9·0	0·0	0
Australia 81	489	210	12·0	0·0	0
Austria 71	193	53	11·0	0·0	1
Austria 81	401	99	20·0	0·0	1
Belgium, Flanders 76	285	99	12·0	0·0	1
Belgium, Flanders 83	401	138	11·5	0·0	1
Canada 71	452	211	0·0	0·0	0
Canada 81	686	322	0·0	0·0	0
Czechoslovakia 80	201	69	0·0	33·0	0
Denmark 72	356	176	13·5	0·0	1
England & Wales 49	97	36	8·5	0·0	1
England & Wales 72	289	111	13·0	0·0	1
FRG 71 Germany 71	225	50	2·0	0·0	1
FRG 82 Germany 82	488	80	7·5	0·0	1
Finland 72	278	89	12·0	0·0	1
Finland 81	496	136	20·0	0·0	1
France 59	83	39	7·0	0·0	1
France 69	150	54	7·0	0·0	1
France 81	459	96	4·5	0·0	1
Hungary 60	24	18	0·0	13·5	1
Hungary 70	76	12	0·0	23·5	0
Hungary 80	111	24	0·0	33·5	0
Irish Republic 73	115	34	3·0	0·0	1
Italy 79	301	61	6·0	0·0	1
Japan 55	32	11	0·0	0·0	1
Japan 65	126	19	0·0	0·0	1
Netherlands 59	125	48	7·0	0·0	1
Netherlands 71	241	70	8·0	0·0	1
Netherlands 83	371	160	9·5	0·0	1
New Zealand 81	560	314	15·0	0·0	0
Northern Ireland 73	202	75	0·0	0·0	1
Norway 57	177	78	15·5	0·0	1
Norway 72	307	138	22·0	0·0	1
Poland 82	97	32	0·0	36·0	0
Scotland 73	294	110	13·0	0·0	1
Sweden 72	557	238	27·0	0·0	0
Scotland 81	796	353	28·5	0·0	0
United States 62	421	173	0·0	0·0	0
United States 73	628	305	0·0	0·0	0
United States 83	790	434	0·0	0·0	0
Yugoslavia 71	36	7	0·0	26·0	0

Notes: (a) T1: number of telephones per 1,000 inhabitants one year before heterogamy table;
(b) T2: number of telephones per 1,000 21 years before heterogamy table;
(c) SD: number of years of social-democratic government in the 40 years before heterogamy table;
(d) SS: number of years of state socialist government in the 40 years before heterogamy table;
(e) A: school selection of pupils at the age of 12, 20 years before a heterogamy table (0 = no selection, 1 = selection).

ment were found in numbers of telephones per capita in a country. Data were assembled for one year (*T1*) and 21 years (*T2*) before the date of an outmarriage table. Hewitt's criticism led to choosing *T2*, whereas *T1* was collected as a check upon it. Older data were taken from Banks (1971), more recent data from United Nations (several years). Data for Scotland and Northern Ireland have been estimated. From regional statistics it is known that in the seventies the number of telephones per capita in Northern Ireland is 0·64 of that in England and Wales. For Scotland this figure is 0·94 (Eurostat, 1979: 345). These figures were applied to earlier numbers of telephones as well. Scores for all exogenous variables are given in Table 4.

A test of hypotheses on relative outmarriage chances

Given a shift in interest from gross mobility rates to relative mobility chances, effects of exogenous variables on relative chances of heterogamy will now be examined. There are several ways of doing so. Exogenous variables may be entered as covariates into models that capture relative chances of heterogamy very parsimoniously by effects like *Step*, into models that devour degrees of freedom like *Sym*, or into models somewhere in between. The choice here is a difficult one. If parameters are to be interpreted, models that fit according to some statistical standard are to be preferred. But when including exogenous variables, models that fit in this way may yield so many parameters that one does not see the wood for the trees. Given the fit of Model 9 in Table 2—the model of *Conditional Heterogeneous Quasi-Symmetry*—, the former rule suggests replacing *T* in that model by all exogenous variables. The latter one, however, rules out this model as a first choice: with five exogenous variables, that model would yield 50 parameters. The first choice of this article therefore is a model including *Step*.

The model of *Conditional Homogeneous Fixed Distances* ([*MT*][*FT*][*Step*],[10] Model 10 in Table 2) has an L^2 of 1,499·3 with 368 degrees of freedom. The model of *Conditional Heterogeneous Fixed Distances* ([*MT*][*FT*][*StepT*], Model 11 in Table 2) has an L^2 of 939·4 with 328 degrees of freedom. These results indicate that the exogenous variables can at most explain 559·9 L^2-points.

In Model 12 of Table 2 the interaction terms of the exogenous variables *A*, *SD*, *SS*, *T1*, and *T2* with *Step* are included. It yields an improvement of 74·5L^2 with five degrees of freedom. This improvement is significant, although not substantial (13 per cent of all that exogenous variables can explain). Model 12 does not fit according to the conventional standard of L^2. Its *BIC*-measure is –2,430, whereas the *BIC*-measure for Model 10 is –2,409. This result is not unsatisfactory. It would have been more satisfactory if the *BIC* for Model 12 had been lower than that for Model 11 (–2,544).

To obtain a model that is satisfactory in this respect, less parsimonious models were applied. Models were employed that specify effects of exogenous variables on *Step* and *Dia*. *Dia* is an effect that contrasts all cells on the main diagonal of a table with those off it. If *Dia* is included, *Step* models the association in off-diagonal cells. Thus the assumption is dropped that relative heterogamy is one four-by-four table may be captured by one parameter (*Step*); heterogamy now is being modelled by two parameters. This yields Models 13, 14, and 15 in Table 2.

Again the model including the exogenous variables does not fit according to conventional standards. With 357 degrees of freedom, Model 15 in Table 2 has an L^2 of 1,271·6. Its *BIC* of –2,520, however, is more negative than that of Model 14 (–2,453) and than the *BIC* of Model 13 (–2,464). This is a more satisfactory result.

A comparison of Models 13 and 14 in Table 2 makes clear that exogenous variables can explain at most 839·5 L^2-points. A comparison of Models 13 and 15 indicates that it explains 162·8 L^2-points (19 per cent of all there is to explain). This reduction is significant but not substantial. Although exact comparisons are not possible, it is clear that similar exogenous variables explain more in the log-linear models for intergenerational mobility tables reported by Grusky and Hauser (1984: Table 5) and Ultee and Luijkx (1986: Table 4). We return to this finding in our discussion.

If Model 15 is preferred, the next question is about its parameter estimates. As this model,

TABLE 5 *Parameter estimates and standard errorrs for Model 15 [MT][FT][Step][StepSD][StepSS][StepA][StepT1][StepT2][Dia][DiaSD][DiaSS][DiaA][DiaT1][DiaT2]*

	Parameter estimates	Standard errors
Step	–0·807	(0·084)
StepSD*	0·940	(0·237)
StepSS*	–0·728	(0·287)
StepA	–0·209	(0·065)
StepT1*	–1·413	(0·246)
StepT2*	2·474	(0·520)
Dia	0·426	(0·118)
DiaSD*	0·664	(0·343)
DiaSS*	–1·525	(0·401)
DiaA	–0·491	(0·092)
DiaT1*	–1·901	(0·334)
DiaT2*	2·283	(0·720)

* Metric coefficient and standard error multiplied by 1,000.

according to conventional standards does not fit, the interpretation of the parameters of the model must be tentative.

According to Table 5, nine out of ten parameters for the covariation of exogenous variables with *Step* and *Dia* are significant. Social democracy decreases the tendency to marry exact equals, but among the educationally mixed marriages, it does not make for larger differences in education between spouses. These effects are net of those of educational laws, so perhaps the significant parameter is the more surprising one for the classical argument outlined earlier: social democracy, after allowing for the educational laws it favours, in one respect still makes for more relative heterogamy. Selection of pupils after the age of 12 on both counts does make for more heterogamy.[11] The two effects of state socialism have the sign opposite to that predicted by the classical argument: state socialism makes for less heterogamy.

The parameters for number of telephones per capita 21 years before an outmarriage table have the sign expected according to the classical argument: economic development makes for outmarriage. Number of telephones per capita one year after an outmarriage table was introduced as an exogenous variable to check Hewitt's argument about historical measures. The parameters for the effects of this exogenous variable are opposite to those of its sister variable. Although this finding attests to the importance of Hewitt's argument about historical measurement of variables in comparative research, it is difficult to make sense of it.

No overall judgement seems possible about the classical and the rival argument. The proper conclusion is that if exogenous variables have effects on heterogamy, they are smaller than those on mobility.

A test of hypotheses on marriage market opportunity structures

Until now marginal frequences were fitted exactly for each table ($[MT][FT]$). This section models differences between the marginals of the educational level variables of husband and wife. Its starting point is a relatively new question for comparative mobility research. When shifting attention from gross mobility rates to relative mobility chances, consequences of variations in origin and destination distributions are discarded. Hauser and Featherman (1977: 170) have argued that more attention to this phenomenon, sometimes termed structural mobility, is appropriate.

In the case of outmarriage tables, two interpretations of variations in marginal frequencies exist. If all males and females are married, and if the educational distribution for married males displays higher education than that for married females, differences between marginals tell about gender inequality in education. This inequality may be smaller in some than in other countries, and larger in certain than in other times. Questions about gender inequality in education form a relevant subquestion of the general problem of stratification, just like questions about mobility and heterogamy. In addition, the extent of gender inequality with respect to education in one country may be regarded as the (un)favourableness of an opportunity structure, as the chances of a person to find a spouse with the same or higher level of education. This degree of competitive imbalance in a marriage market may differ from country to country and from time to time, and questions about it are a proper part of questions on outmarriage.

Log-linear models for the marginals of

mobility tables were developed by Hope (1981b) and Sobel, Hout and Duncan (1985). The latter's *size effects*[12] had been labelled *Halfway effects* by Hope. Hope also introduced a model assuming a linear constraint on Sobel, Hout and Duncan's *structural difference effects*,[13] a constraint which he labelled *Shift*. This *Shift* effect postulates that the lack of correspondence between the marginals of an educational heterogamy table is a regular inequality, women having systematically less (or more) education than males. If males have more education than females, the marriage market opportunity structure for males is unfavourable and for females favourable. We use *H* to designate *size effects*, *D* for *structural difference effects*, and *Shift* for *shift effects*.

Are there gender inequalities within one country and, if so, are they pretty much the same in industrial societies? Comparison of the model of *Conditional Heterogeneous Symmetry* ([*HT*][*SymT*], Model 7 in Table 2) and the model of *Conditional Heterogeneous Quasi-Symmetry* ([*MT*][*FT*][*SymT*],[14] Model 9 in Table 2) yields an L^2 reduction of 2,758·2 with 123 degrees of freedom. This result indicates that gender inequalities in each country indeed exist. In addition gender inequalities are not the same in all tables: comparison of Model [*HT*][*D*][*SymT*] and Model [*MT*][*FT*][*SymT*] yields an L^2 of 1,466·8 with 120 degrees of freedom. Assuming a linear constraint in the marginal differences the conditional test results in 776·9 with 40 degrees of freedom (Table 2, Models 16 and 17).

Since there are differences between tables with respect to gender inequalities, the question of how to explain them arises. The classical argument predicts that social-democracy, state socialism and selection of pupils after the age of 12 years redress inequalities between educational structures for males and females (cf. Dobson, 1978). Also according to this argument, economic development should lead to smaller gender inequalities in education. The rival argument predicts that economic and political factors have no effects. If women start entering a higher level of education, as a defence men will increasingly enter an even higher one.

Model 18 in Table 2 specifies the interaction of the exogenous variables with the *Shift* in structural differences and table-specific *Symmetry* effects. It contains the hypotheses about effects of exogenous variables on marginal differences just outlined. Compared with Model 16, Model 18 for five degrees of freedom yields a decrease of 192·1 L^2. This is a significant, although not a substantial, reduction (25 per cent of all that can be explained). Model 18 does not fit according to conventional standards, making interpretation of its parameters tentative. The *BIC* of Model 18 is not unsatisfactory.

TABLE 6 *Parameter estimates and standard errors for Model 18 [MT][FT][Shift][ShiftSD][ShiftSS][ShiftA] [ShiftT1][ShiftT2]*

	Parameter estimates	Standard errors
Shift	–0·153	(0·030)
ShiftSD*	0·140	(0·089)
ShiftSS*	0·010	(0·098)
ShiftA	–0·125	(0·024)
ShiftT1*	–0·140	(0·088)
ShiftT2*	0·540	(0·188)

* Metric coefficient and standard error multiplied by 1,000.

To see whether hypotheses on consequences of economic and political factors on gender inequality are corroborated or disconfirmed, signs of parameters for Model 18 were consulted (see Table 6). The parameters for the effect of number of telephones per capita 21 years before an heterogamy table and educational laws on *Shift* are significant, while those for number of telephones one year before a table, social democracy, and state socialism are not. Findings about effects of number of telephones are in line with Hewitt's argument about measurement in comparative research.

The signs of the parameters for number of telephones 21 years before a table, social democracy and educational laws are as expected according to the classical argument: if a country's level of economic development is higher, if the number of years of social-democratic government is higher, and if schools select pupils after the age of 12, gender inequality in education is smaller. All in all the classical argument is upheld.

EDUCATIONAL HETEROGAMY AND FATHER-TO-SON OCCUPATIONAL MOBILITY

Finally, the issue of whether countries with more equal relative chances of father-to-son occupational mobility have more equal or less equal relative chances of educational heterogamy can be addressed. If more equal relative mobility goes together with more equal relative heterogamy, the classical argument is vindicated. If it is found that more equal mobility chances go together with less equal heterogamy chances, the rival argument is upheld. A similar question may be asked for gross mobility and heterogamy rates.

To answer these questions, data were taken from two benchmark studies on comparative father-to-son mobility. From Grusky and Hauser (1984) were taken tables for Australia, Belgium, Denmark, Federal Republic of Germany, Finland, France, Hungary, Italy, Japan, Norway, Sweden, United States, and Yugoslavia. Several of these tables also figure in Heath (1981). From the latter study were taken data for Canada, England & Wales, and Poland. Data for Austria were taken from Haller (1982), data for Czechoslovakia from Connor (1979: 119), data for the Irish Republic from Hout and Jackson (1986). Tables for the Netherlands, New Zealand, Northern Ireland, and Scotland were obtained from Ganzeboom, Luijkx and Treiman (1989). The uneven quality of these data is acknowledged. For that reason alone, the comparison to be presented is tentative. However, a set of high-quality tables is being accumulated (Erikson and Goldthorpe, 1987).

All 23 intergenerational mobility tables (see Table 7) originally were based on a non-manual–manual-farm classification. Manual and farm categories were collapsed, yielding an approximately ordinal classification. (Movement between non-ordered categories like farm and manual, do not tell about a society's openness in a strict sense.) For each resulting table the percentage of mobile persons, and the odds ratio (that is, the relative chances of mobility), were calculated. Each mobility table of a country was paired with the educational heterogamy table for this country. If two outmarriage tables were available, the one closest in time was chosen.

TABLE 7 *Father-to-son occupational mobility data for 23 post-war industrial nations.*

Country	Relative Frequencies[a]			
Australia 1965	158	107	200	535
Austria 1976	254	82	227	437
Belgium, Flanders 1968	295	67	239	399
Canada 1974	214	73	275	438
Czechoslovakia 1967	78	49	253	620
Denmark 1972	174	79	176	571
England & Wales 1972	196	105	226	473
Fed. Rep. Germany 1969	301	93	173	433
Finland 1972	97	77	158	668
France 1964	233	115	186	466
Hungary 1963	46	19	161	774
Hungary 1982	109	116	165	610
Irish Republic 1973	137	79	174	610
Italy 1963	174	63	131	632
Italy 1972	195	102	210	493
Japan 1965	236	73	225	466
Netherlands 1982	304	109	236	351
New Zealand 1973	273	121	267	339
Northern Ireland 1973	89	57	178	676
Norway 1972	209	79	262	450
Poland 1972	72	79	143	706
Scotland 1973	96	74	213	617
Sweden 1972	198	67	241	494
Sweden 1974	158	95	244	503
United States 1962	181	86	251	482
Yugoslavia 1962	89	46	167	698

Note: (a) Relative cell frequencies of intergenerational mobility tables are given in per thousands and in the following order:
(1) non-manual father–non-manual son
(2) non-manual father–manual or farm son
(3) namual or farm father–non-manual-son
(4) manual or farm father–manual or farm son.

Four-by-four classifications of outmarriage tables were left intact. For each outmarriage table the percentage of heterogamous marriages and the *Step* parameter of the log-linear model $[M][F][Step]$ was used. When comparing data for father-to-son mobility and for heterogamy, in 12 out of 23 cases mobility and heterogamy tables come from different surveys. This makes comparisons even more awkward. Also, Belgium's mobility table pertains to the whole country, while its heterogamy table pertains to Flanders.[15] Belgian data might be more unreliable than those for other countries.

Table 8 gives these four statistics for this article's 23 countries. All odds ratios are above

TABLE 8 *Comparison of father-to-son occupational mobility and heterogamy data for 23 post-war industrial nations*

Country[a]	mobility rate[b]	heterogamy rate[c]	odds ratio mobility[d]	step parameter heterogamy[e]	odds ratio heterogamy[f]
Australia 65–66	31	30	3·9	0·39	13·1
Austria 76–81	31	25	6·0	0·44	21·0
Belgium, Flanders 68–76	31	52	7·4	0·48	7·5
Canada 74–71	35	37	4·7	0·37	13·6
Czechoslovakia 67–80	30	46	3·9	0·41	8·4
Denmark 72–72	26	32	7·1	0·31	22·9
England & Wales 72–72	33	40	3·9	0·52	8·1
FR Germany 69–71	27	55	8·1	0·37	13·3
Finland 72–72	24	33	5·3	0·35	25·9
France 64–69	30	34	5·1	0·34	16·7
Hungary 63–60	18	25	11·6	0·28	45·3
Irish Republic 73–73	25	19	6·1	0·45	10·5
Italy 64–79	19	34	13·2	0·29	24·4
Japan 65–65	30	43	6·7	0·34	13·4
Netherlands 82–83	34	57	4·1	0·50	5·0
New Zealand 73–81	39	46	2·9	0·57	5·0
Northern Ireland 73–73	24	17	5·9	0·52	8·8
Norway 72–72	34	49	4·5	0·42	12·0
Poland 72–82	22	49	4·5	0·52	5·0
Scotland 73–73	29	33	3·8	0·51	8·0
Sweden 72–72	31	39	6·1	0·38	11·5
United States 62–62	34	49	4·0	0·44	8·9
Yugoslavia 62–71	21	25	8·1	0·28	44·2
Alternative items:					
Hungary 82–80	28	36	3·5	0·29	16·3
Italy 72–79	31	34	4·5	0·29	24·4
Sweden 74–81	34	45	3·4	0·43	12·2

Notes: (a) Next to country name: year of mobility and heterogamy table;
(b) Percentages Males Mobile into and out of the Non-Manual Category;
(c) Percentages Educationally Heterogamous Couples;
(d) Odds ratio for Non-Manual/Otherwise Mobility;
(e) Step-parameter of the Log-linear Model [M][F][Step] for an Educational Homogamy Table;
(f) Odds ratio for Lower/Higher Educational Heterogamy.

unity, implying a positive relation between fathers' and sons' occupations in every country; all *Step* parameters are below unity, standing for a positive relation between husband's and wife's education in each nation.[16]

The correlation between the percentage of intergenerationally mobile men in a country and the educational heterogamy rate, turns out to be 0·51. The correlation between the odds ratio for a country's mobility table and the *Step* parameter for a country's educational heterogamy takes on the value of −0·67. The latter negative sign implies that if relative mobility chances in a country are more equal, relative heterogamy chances are so too. Given the way scores for countries were obtained, there is not much point in calculating the significance of correlations.

The correlations just reported are not only tentative because of the uneven quality of the mobility data, but also because they are based on small numbers. To alleviate these difficulties somewhat, four checks were made on their stability. First, without (Flemish) Belgium the correlation between relative mobility and relative heterogamy takes on the value of –0·70. Secondly, inspection of mobility odds ratios makes clear that relative mobility chances are less equal in Sweden than in England & Wales.

This is at variance with the conclusion of Erikson, Goldthorpe and Portocarero (1982) that Sweden surpasses England & Wales in equality of relative mobility chances, and suggests something amiss with the 1972 survey from which for Table 8 Sweden's mobility data were taken. In fact, Sweden's heterogamy table was taken from the same survey. Taking the odds ratio from Erikson, Goldthorpe and Portocarero's 1974 mobility table for Sweden, and the *Step* parameter from the other heterogamy table for Sweden used in this article (see the bottom rows of Table 8), it is possible to replace the original values for this country by better ones. This substitution yields a correlation of –0·66. Thirdly, Hungary and Italy have very high odds ratios, turning them into influential cases. For these countries substitute tables were found in Ganzeboom, Luijkx and Treiman (1989) (again see the bottom rows of Table 8). The correlation between odds ratio and *Step* parameter now is –0·37. This amounts to a substantially lower association, but the coefficient maintains its sign. Fourthly, all three changes just detailed were implemented at the same time. This yielded a correlation of –0·45 between mobility odds ratio and heterogamy *Step* parameter. In this case the correlation between gross mobility rate and gross heterogamy rate is 0·48.

These four checks on a tentative result are encouraging. To some extent relative chances of father-to-son occupational mobility and relative chances of educational outmarriage do seem to go together. So do gross mobility and heterogamy rates. With the limited means at hand, some support has been found for the classical argument.

This tentative result not only implies that the rival answer to this article's fourth question is untenable. It also suggests that the support found earlier on for the rival answer to this article's first question was spurious. Dissimilarity in educational heterogamy was predicted and found, but this prediction assumed a compensatory interdependency. At that time, its occurrence was not ascertained. Now that this hypothesis has been found wanting, the earlier affirmation of the rival argument has lost its force.

Now an extra question and a bonus result. Is relative heterogamy within one country more equal or less equal than relative father-to-son occupational mobility? It is, of course, impossible to compare the odds ratio for father-to-son mobility in a country with the *Step* parameter for educational heterogamy in that country. The former measure is based on a two-by-two classification, and the latter one on a four-by-four classification. However, by combining the two lowest levels of education (primarily geared at manual jobs), and the two highest levels (aiming at non-manual occupations), a two-by-two educational heterogamy table is obtained. Odds ratios for the latter tables are presented in the last column of Table 8. The correlation between the odds ratio for educational heterogamy and the *Step* parameter for heterogamy is –0·78, indicating that collapsing does not lead to unacceptable results. In addition, the correlation between the odds ratio for mobility and that for educational heterogamy is 0·68 (0·49 for the series with the alternative items).

If now for each country its odds ratio for father-to-son occupational mobility is compared with its odds ratio for educational heterogamy, an interesting finding is obtained. It turns out that in each comparison the odds ratio for heterogamy is higher than that for mobility. A father-to-son mobility table displays more openness than an educational heterogamy table.

DISCUSSION

This article set out to collect tables for educational heterogamy in industrial societies. For 23 countries 41 tables were obtained. Although these numbers are high compared with the numbers of tables and countries dealt with in studies on father-to-son occupational mobility typical of the 1980s, statistically speaking they are low enough to emphasize the tentativeness of this article's conclusions. Caution is in order too because of the interpretation of parameters of log-linear models that according to traditional standards do not fit, and the uneven quality of the father-to-son mobility data employed.

The broader issue addressed by analyzing these tables was whether educational

heterogamy and father-to-son mobility provide indications of societal openness that are different in kind, or whether openness is a general societal phenomenon. It was tackled by developing two alternative sets of hypotheses answering four specific questions. Three of these questions were similar to questions current in comparative father-to-son mobility research. The first question was whether patterns of heterogamy are similar in industrial societies. The second was whether there is a trend towards more educational heterogamy in industrial societies, the third whether economic and political factors influence a country's heterogamy in the same way as they supposedly influence its mobility, and the fourth whether more mobility goes hand in hand with more heterogamy.

One set of answers to these questions was dubbed the classical argument. Prime propounders are Lipset and Zetterberg (1959). This argument consists of affirmative answers. Another one was called the rival argument. It applies Bourdieu's (1972, 1974) notion of compensatory interdependencies between strategies of reproduction, and provides negative answers to this article's questions.

The first findings of this article were that industrial countries differ in rates and in relative chances of educational heterogamy. These findings tell against the classical argument, and provide some support for the rival one. The second results indicated a slight trend towards higher rates and more equal relative chances of educational outmarriage. Those findings contradict the rival argument and are in favour of the classical argument.

According to the third findings of this article, some effects of political and economic factors on relative chances of educational heterogamy and marriage market opportunity structures occur. These effects are not fully in accord with the classical argument, nor do they always corroborate the rival argument. All factors taken together provide only a very partial explanation of the differences between this article's heterogamy tables. A rough comparison suggested that similar factors explain more of father-to-son mobility.

This article's fourth result was that if an industrial country's relative chances of mobility are more equal, its relative chances of outmarriage are so too. It confirms the final part of the classical argument and contradicts the rival one. This in turn shows the initial evidence of support for the rival argument to be spurious.

One of this article's findings was that if an industrial nation's schools select and track pupils according to ability after the age of 12, relative chances of educational heterogamy in that country are more equal. Although school selection is a new exogenous variable in comparative openness research, this finding is encouraging for future studies. Another promising finding is that later selection seems to make for more equal relative mobility chances. On the basis of the data employed in this article, a correlation between school selection before the age of 12 (no, yes) and mobility odds ratios may be computed. This correlation has a value of 0·35 (for the original data, 0·39 for the later data). This correlation is as expected according to this paper's classical argument.

As regards the rival argument, the findings have not been wholly negative. The result that state socialism does not make for more educational heterogamy might indicate that compensatory interdependencies do not occur when changes are incremental, but that they do when changes are fundamental. This interpretation is upheld by this article's finding on educational laws, an incremental change that makes for more heterogamy.

Reviewing all four sets of findings of this article, it might be said that although Lipset and Zetterberg were wrong in holding that mobility and marriage patterns were pretty much the same in industrial societies, their notion that openness is a pervasive and general societal characteristic has been upheld. Their argument fared better than the rival argument that outmarriage and mobility are compensatory strategies of reproduction and different in kind. Yet, given the result that there is less relative educational heterogamy than relative father-to-son occupational mobility, the classical argument must be augmented. That finding is reminiscent of Bogardus' scale for subjective distance between nationalities and Guttman scales in general. It suggests the notion of a hierarchy of indicators for societal openness, with inter-

generational mobility being the 'easy' item, and educational heterogamy the more difficult one. The finding that political and economic factors are better in explaining father-to-son mobility than in explaining educational heterogamy points into the same direction. Closer ties seem less amenable to outside influences.

NOTES

1. The relevance attached to outmarriage carries the weight of classical sociology. Cf. de Tocqueville ([1835], 1967: 160) and Weber ([1921], 1972: 179, 537).
2. This paper does not concur with the argument that homogamy caused by residential segregation does not indicate societal openness. It amounts to rendering one indicator for openness invalid by postulating another (cf. Coleman, 1977).
3. The well-known distinction between class as an attribute and class as a relation (cf. Ingham, 1970) is here transformed into the distinction between mobility as the movement of one unit and mobility as the formation of a relation between two units (cf. Bourdieu, 1984).
4. [*MFT*] means that the three-way marginals of the three-way table (*MFT*) are fitted; [*MT*][*FT*][*MF*] meaning that the two-way marginals [*MT*], [*FT*], and [*MF*] of the three-way table (*MFT*) are fitted. This always implies that lower order marginals are fitted as well: in the case of [*MFT*] the two-way marginals [*MT*], [*FT*] and [*MF*], and the one-way marginals [*M*], [*F*], and [*T*].
5. Although this is not in line with the strict use of Goodman's hierarchical notation, we do not think that this will cause any problems. In other words [*MT*][*FT*][*SymT*] denotes the *Conditional (Heterogeneous) Quasi-Symmetry Model*: the model of *Quasi-Symmetry* holds in every table. The Model [*MT*][*FT*][*Sym*] assumes *Conditional Homogeneous Quasi-Symmetry*, i.e. the symmetry parameters are the same for all tables.
6. Note that this result depends upon the decision to scale every educational heterogamy table to a size of 1,000.
7. The Fixed-Distance Model puts the following restrictions on the b_{ijk} parameters: $b_{ijk}=b_k^* \mid i\text{-}j \mid$ (i=1,..,4; j=1,..,4). Sobel, Hout, and Duncan (1985) argued that models for cell associations should be symmetric. The *Fixed-Distance Model* belongs to this class. The fit of this model was decidedly better than that of the model of uniform association. Note that a *Step* Model is more parsimonious than a *Sym* Model. Instead of ten parameters only one parameter is used to describe the (symmetric) association in a four-by-four table.
8. In a multiplicative specification: the more *Step* goes away from zero towards unity, the more open is a marriage pattern.
9. Note that the variable T has only two values in this analysis: the former and the latter table of one country.
10. We are talking about 41 tables again.
11. A is coded *no,yes*.
12. a_{1ik} and a_{1jk}.
13. $a_{2jk}=a_{2k}^*(i\text{-}j)$ (i,j=1,..,4).
14. Alternatively this could be designated by [*HT*][*DT*][*SymT*].
15. What is more, Belgium's mobility table, although used in two benchmark studies, contains an error. The original source (Delruelle, 1970) makes clear that for working males living in their parents' house, their own occupation is not used, but that of the head of the household in which respondent is living. That is, for these persons father's occupation has been cross-classified with father's occupation, making for lower rates of mobility and more unequal relative mobility chances in a table for the whole Belgian population.
16. The more an odds ratio approaches unity, the more equal are relative mobility chances; the more equal to unity a *Step* parameter, the more equal are relative heterogamy chances.

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APPENDIX ON DATA AND SOURCES

Australia 1966: Data are from the Australian 1966 population census. The original table had a four-by-four form. The four categories were: (*a*) primary or some high school; (*b*) intermediate certificate; (*c*) matriculation certificate; (*d*) tertiary certificate. Source: Broom and Jones (1976: 20).

Australia 1981: Data are tabulated from the 1 per cent public use sample of the 1981 Census of Population and Housing, Households sample file. The file contained two educational variables: *age left school* and *qualifications obtained*. On their base, one variable with the following four categories was constructed: (*a*) left school at 14 years or younger and none of the qualifications mentioned under (*d*); (*b*) left school at 15 years and none of the qualifications mentioned under (*d*); (*c*) left school at 16 or later and none of the qualifications mentioned under (*d*); (*d*) higher degree merged with graduate diploma, bachelor degree, and diploma level. The tape was obtained from the Social Sciences Data Archives, The Australian National University, Canberra. Jones (1987) is also based on this tape.

Austria 1971: Data are from the Austrian 1971 population census. The original table had a four-by-four form. The four categories were: (*a*) Pflichtschule (einschliesslich Lehrausbildung); (*b*) mittlere Schule; (*c*) höhere Schule; (*d*) Hochschule und verwandte Lehranstalte. Source: Findl (1978: 861). We are grateful to Herrn I. Reichardt, Librarian of the Institut für höhere Studien in Vienna for making this study available.

Austria 1981: Data are from the Austrian 1981 population census. The original table had a five-by-five form. The five categories were: (*a*) allgemein bildende Pflichtschule; (*b*) Lehre; (*c*) Fachschule; (*d*) höhere Schule; (*e*) Hochschule und verwandte Lehranstalt. For this article categories (*a*) and (*b*) were collapsed. This classification is identical to that for Austria in 1971. We are grateful to Prof. Dr. Max Haller, Karl-Franzens-Universität Graz for pointing out the whereabouts of this table. Source: Österreichisches Statistisches Zentralamt (1986: 81).

Belgium, Flanders 1976: Data are from the Third National Survey on Family Formation conducted in 1976. The sample consists of women between 20 and 44 years of age. The table originally had a five-by-five form: primary schooling, lower secondary, higher secondary, non-university higher education and university. The last two categories were merged. The table was taken from the tape of this survey. We are grateful to Prof. R. L. Cliquet, Centrum voor Bevolkings- en Gezinsstudieën, Brussels, for making this table available. Information on the survey in contained in Cliquet (1983: 14).

Belgium, Flanders 1983: Data are from the Fourth National Survey on Family Formation conducted in 1983. Otherwise as **Belgium, Flanders 1976**. Information on the survey: Debusschere (1985).

Canada 1971: Data are from the 1971 Canadian Population Census. The original table had a six-by-six form. The four categories of this article were obtained as follows: (*a*) less than grade 5 merged with grades 5 to 8; (*b*) grades 9 to 11 merged with grades 12 and 13; (*c*) some university; (*d*) university degree. Source: Statistics Canada (1974: 62). We are grateful to Prof. Richard A. Wanner, University of Calgary, for pointing out the existence of this table and the 1981 table and for information on the Canadian educational system.

Canada 1981: Data are from the 1981 Canadian population census. The original table had a seven-by-seven form. The four categories of this article were obtained as follows: (*a*) less than grade 9; (*b*) grades 9 to 13 merged with non-university without certificate or diploma and with non-univiersity with certificate or diploma; (*c*) university without degree, certificate or diploma merged with univeristy with certificate or diploma; (*d*) university degree. This classification is comparable to that in **Canada 1971** Source: Statistics Canada (1984: 9).

Czechoslovakia 1980: Data are from the 1980 census and pertain to married couples including concensual unions. The original table had an eight-by-eight form. Couples with at least one spouse with unstated education were eliminated (30,299 cases). The final four categories were: (*a*) no schooling, not completed first level merged with first level completed; (*b*) vocational completed; (*c*) second level first stage special completed merged with second level second stage general completed and with second level second stage special completed; (*d*) third level completed. The table (Table 909 of the 1980 Census) was made available by B. Titerova, Director International Statistics Division, Federalni Statisicky Urad, Praha, who also supplied translations of table headings. We are very obliged for these services.

Denmark 1972: Data are from the 1972 Scandinavian Welfare Survey. Sample consisted of males and females between 15 and 64 years. The original table had an eight-by-eight form. Less than elementary education and elementary education were recorded as lowest level, elementary plus and middle school as second lowest level, middle school plus and matriculation as second highest level and matriculation plus and university as highest level. The table was taken from a file made available by the Danish Data Archives in Odense. Information on the Scandinavian Welfare Survey is contained in Pöntinen (1980) and Allardt (1981).

England & Wales 1949: The table was published by Berent (1954: 331), and is taken from Glass' 1949 mobility survey. The following four educational levels were distinguished: elementary, secondary, further education and higher education. The survey was a sample survey of males and females older than 18 years.

England & Wales 1972: Data are from the 1972 Oxford Mobility Study. This is a sample among males between 20 and 64 years. Data were taken from a file made available by the ESRC Data Archive, University of Essex. The file had several variables on education. An earlier recoding was improved by Dr. Anthony Heath, University of Oxford. People who had left school at the minimum leaving age were given the lowest level, those who stayed on but failed to get O-level or above were given second lowest, people who obtained O-level or above but not a higher level qualification were given the second highest level, and those that obtained a degree or a higher level professional education were given the highest level. We are extremely grateful to Dr. Anthony Heath for checking an earlier recoding and suggesting alternatives. The table is not comparable to **England & Wales 1949**. Halsey, Heath and Ridge (1980) is based on this file.

Federal Republic of Germany 1971: The table is from the 1971 micro census. The table had a six-by-six form, in the following manner reduced to a four-by-four form: (*a*) Volksschule ohne Lehre; (*b*) Volksschule mit gewerbliche Lehre merged with Volksschule mit kaufmännischer Lehre; (*c*) mittlere Abschlusse; (*d*) Abitur, Fachhochschule merged

with Hochschulabschluss. The table was made available by Prof. Dr. R. Ziegler, Institut für Soziologie der Ludwig-Maximilians-Universität Müchen. An analysis of this table is contained in Ziegler (1985).

Federal Republic of Germany 1982: The table is from the merged files of the ZUMA Allbus 1980–1984 sample surveys. This table is comparable to **Federal Republic of Germany 1971**.

Finland 1972: Data are from the 1972 Scandinavian Welfare Survey. For other information see **Denmark 1972**, to which this table is comparable.

Finland 1981: The table is from the 1981 Finnish Central Statistics Office Household Survey. The sample was at the individual level (persons 15 years or older), but was reweighed to obtain representativity at the household level. The original table had an eight-by-eight form, reduced to the following four-by-four form: (*a*) less than primary school merged with primary school (in the new school system: less than comprehensive merged with comprehensive for those having been part of the new school system); (*b*) middle school or primary plus lower vocational (or comprehensive plus lower vocational); (*c*) middle school plus higher vocational, matriculation (comprehensive plus higher vocational); (*d*) lowest level higher education merged with lower candidate examination and with higher level candidate examination. This classification is not wholly comparable to that for **Finland 1972**. Information on the 1981 Household Survey is contained in: Central Statistical Office of Finland 1984. We are grateful to Dr. Seppo Pöntinen, University of Helsinki, for procuring this table.

France 1959: Data are taken from Girard (1964: 80). The sample consisted of first marriage couples, husbands under 65 years and wives under 62 years. The original classification counted five categories, merged in the following way: (*a*) primaire; (*b*) primaire supérieure merged with technique; (*c*) secondaire; (*d*) supérieure.

France 1969: Data are taken from a tape in the Belgian Archives for the Social Sciences, Louvain-la-Neuve (BASS number 7304), from a sample survey on attitudes towards the family in France conducted by the Section de Psychologie de l'Institut National d'Études Démographiques. No age limits were indicated. The survey apparently is a replication of Girard's 1959 survey. The educational classification and recode is that of **France 1959**.

France 1981: The table originates in the Enquête Emploi of March 1981, Institut National de la Statistique et des Études Économiques, Paris. This is a sample survey with about 60,000 respondents, both males and females, no age limits are indicated. We estimate that the table for educational heterogamy is based on about 40,000 marriages. The educational classification was based on diplomas and consisted of seven categories. The category *néant* was given the lowest level, *CEP*, *CAP* and *BEPC* the second lowest, *Baccalauréat* second highest, and *DUEL*, *DUES* and *Licence ou plus* the highest level. The table was made available by Monsieur P. A. Audirac of the INSÉÉ. We are very appreciative of his perseverance in locating this table in archives. The table is not comparable to **France 1959** nor to **France 1969**.

Hungary 1960: This table is from the official publication on the 1960 Census. We are grateful to Pétér Róbert, Institute for Social Sciences, Budapest, who pointed out the existence of this table and similar ones for 1970 and 1980, and who was so kind as to translate table headings. Recodings are as follows: (*a*) illiterate, no education, primary 1–3 classes, primary 4–5 classes, and primary 6–7 classes; (*b*) primary 8 classes and unfinished secondary; (*c*) maturity, and unfinished university; (*d*) university diploma. Source Központi Statisztikai Hivital (1964: 53).

Hungary 1970: This table is from the 1970 census and comparable to **Hungary 1960**. Source Központi Statisztikai Hivital (1982: 284–285).

Hungary 1980: See **Hungary 1960**, to which this table is comparable. Source Központi Statisztikai Hivital (1982: 286–289).

Irish Republic 1973: This table was taken from a 1973 sample survey among economically active males between the age of 18 and 64 years. The table originally had a six-by-six form. Ph.D. level and university degree level were merged into *highest level*, *hnc* and *hnd* level (one original category) were recoded as *second highest level*, O-level and leaving certificate were merged in *second lowest level*, and below O-level was recoded as *lowest level*. We are grateful to Prof. John H. Jackson, Trinity College, Dublin, and Robert L. Miller, The Queen's University of Belfast, for making this table available. Hout and Jackson (1986) is based on data from the same file.

Italy 1979: Data are from the Italian file of the Poverty Survey for the European Economic Community, deposited at the Steinmetz Archives in Amsterdam by A. J. M. Hagenaars and B. M. S. van Praag (number P0867). The lowest educational level was *scuola elementare senza licenza* merged with *licenza di scuola elementare*, second lowest level *dipolma di scuola media inferiore*, second highest *diploma di scuola media superiore*, and highest *laurea*. A report on this survey is Van Weeren and Van Praag (1984).

Japan 1955: Data are taken from the 1955 Social Stratification and Mobility Survey. Respondents in this sample survey were males between 20 and 64 years of age. The original table has a nine-by-nine form. Recoding was as follows: (*a*) no education merged with 6 years; (*b*) 8 years merged with 9 years; (*c*) 11 years merged with 12 years; (*d*) 14 years merged with 16 and 17 years. We are grateful to Prof. Ken'ichi Tominaga and Yoshiaki E. Noro, University of Tokyo, for making this table available and for information on the Japanese educational system. A publication based on the data file of this table is Tominaga (1969).

Japan 1965: Data are from the 1965 Social Stratification and Mobility Survey. The original table had an eight-by-eight form. Six years of education were recoded as *lowest level*, 8 and 9 years as *second lowest level*, 11 and 12 years are *second highest* and 14, 16 and 17 years as *highest*. Otherwise as **Japan 1955**, to which the data are comparable.

Netherlands 1959: The table is taken from a trial for the 1960 population census. The table originally had a four-by-four form, see **Netherlands 1983**. Source: De Hoog (1979).

Netherlands 1971: The table is taken from the Dutch 1971 population census. It is based on a 10 per cent sample from original files and refers to about 300,000 marriages. The table originally had a four-by-four form, see **Netherlands 1983**. The table is comparable to **Netherlands 1959**. Source: De Hoog (1979).

Netherlands 1983: Data are from the Life Situation Survey conducted by the Central Bureau of Statistics among males and females 18 years or older. Data were recoded from a very detailed educational classification into the following four classes: (*a*) only primary school; (*b*) completed lower vocational or middle general; (*c*) completed lower vocational or middle general; (c) completed middle vocational higher general; (*d*) completed university or higher professional. These four categories are comparable to **Netherlands 1959** and **Netherlands 1971**. Tape made available by the Steinmetz Archives, Amsterdam.

New Zealand 1981: Table was obtained for a substantial sum from the computer tapes of the New Zealand 1981 Census. Lowest level of education was *no secondary education*, second lowest level *3rd–5th form*, second highest *6th form* merged with *7th form*, and highest *university* merged with *teachers' college, polytechnical—technical institute—community college* and *other tertiary*.

Northern Ireland 1973: See **Irish Republic**, to which this table is comparable.

Norway 1957: This table has been made available by Mr. Bjørn Henrichsen and Mr. John-Erik Agotnes, of the Norwegian Social Science Data Services, Oslo, to whom our thanks. The table is from the Norwegian 1957 Election Study. We have no details on this study, that apparently samples adult males and females. The original table had a five-by-five form, collapsed as follows: (*a*) folkeskole; (*b*) realskole, middelskole merged with folkehøgskole and with framhaldskole; (*c*) gymnas; (*d*) universitet, høgskole.

Norway 1972: See **Denmark 1972**, to which this table is comparable. Table is not strictly comparable to **Norway 1957**.

Poland 1982: This table is from a sample survey of households. The survey was undertaken by Prof. Dr. Lydia Beskid, Polish Academy of Sciences, Warsaw, and the table was made available by Prof. Jules Peschar and Dr. Ronald Batenburg, University of Groningen, Netherlands. The original table had 13 educational categories, reduced to the following four: (*a*) no education, elementary incomplete, elementary complete, basic vocational incomplete; (*b*) basic vocational complete, secondary vocational incomplete, secondary general incomplete; (*c*) secondary vocational complete, secondary general complete, post secondary general incomplete, post secondary general complete, university incomplete; (*d*) university complete.

Scotland 1973: Data are from a tape made available by the ESRC Data Archive, University of Essex, of the 1973 Scottish Mobility Survey. For the design of the survey and the recodings of the educational variables, see **England & Wales 1972**, to which this table is comparable.

Sweden 1972: See **Denmark 1972**, to which it is comparable.

Sweden 1981: Data are from the 1981 Level of Living Survey. This survey samples Swedish population of 15–75 years. We are grateful to Prof. Dr. Robert Erikson and Dr. Janne Jonsson, Swedish Institute for Social Research, Stockholm, for making this table available. This table is not strictly comparable to **Sweden 1972**.

United States 1962: This table is from the file of the 1962 Occupational Changes in Generation Survey. This study was part of the March 1962 Current Population Survey of the U.S. Bureau of the Census. Males between 20 and 64 years were sampled. The original table had an eight-by-eight form. *Lowest level* was formed by elementary 1–4, elementary 5–7 and elementary 8, high school 1–3 were *second lowest level*, high school 4 was *second highest level* and college 1–3, college 4 and college 5^+ were *highest level*. The file was obtained from the Data and Program Library Services, University of Wisconsin, Madison. The main study based on this file is Blau and Duncan (1967).

United States 1973: This table is from the file of the 1973 Occupational Change in a Generation Survey. This study was part of the March 1973 Current Population Survey of the U.S. Bureau of the Census. Males between 20 and 64 years were sampled. For recodings, see **United States 1962**, to which the 1973 table is comparable. Main study: Featherman and Hauser (1978).

United States 1983: This table is from the 1982–1985 General Social Survey, a sample of adult males and females. Only males aged between 20 and 64 were selected. The tape of this file was obtained from the Inter-University Consortium for Political and Social Research, Ann Arbor, Michigan. For recodings, see **United States 1962**, to which this 1983 table is comparable.

Yugoslavia 1971: This table is from the tape of a comparative survey reported in Verba, Nie and Kim (1978). The tape was obtained from the Inter-University Consortium for Political and Social Research, Ann Arbor, Michigan. The sample pertains to adult males and females in the provinces Croatia, Macedonia, Serbia, and Slovenia. Recodings were as follows: (*a*) no education, merged with 4 years or less primary school and 4–8 years primary school; (*b*) occupational school; (*c*) high school, teachers' college or technical school; (*d*) college.